

WHAT IS CLAIMED IS:

1. A transmission mechanism of an automotive vehicle comprising:
  - a first gear connected with a motor of the automotive vehicle;
  - a propeller shaft, on which a sliding gear and a second gear are mounted;
  - a differential mechanism including a left side bevel gear, a planetary gear bracket and a right side bevel gear;
  - a core shaft passing through the differential mechanism;
  - a dual tandem gear mounted on the core shaft;
  - a third gear mounted on the core shaft and meshing with the second gear;
  - two rear wheel output shafts disposed in parallel below the core shaft;
  - a fourth gear and a fifth gear mounted on the two rear wheel output shaft, respectively, and engaged to the right side bevel gear and the left side bevel gear, respectively; and
  - two front wheel output shafts removably connected with the two rear wheel output shafts, respectively, wherein the sliding gear can be regulated to engage either the first gear or the dual tandem gear so that the propeller shaft can obtain different rotate speeds.
2. The transmission mechanism of claim 1, wherein the dual tandem gear has a larger gear and a smaller gear, and the sliding gear has a first outer gear and an inner gear, wherein the larger gear can engage the first gear and the sliding gear can be regulated to engage the smaller gear with the first outer gear or to engage the first gear with the inner gear.
3. The transmission mechanism of claim 1, wherein the two front wheel output shafts are connected with the two rear wheel output shafts by two overrunning clutches, respectively.
4. The transmission mechanism of claim 2, wherein the two front wheel output shafts are connected with the two rear wheel output shafts by two overrunning clutches, respectively.
5. The transmission mechanism of claim 4, wherein the overrunning clutch is a friction sprag type one way overrunning clutch.

6. The transmission mechanism of claim 1, wherein one end of the propeller shaft is mounted within the first gear via bearings.

7. The transmission mechanism of claim 2, wherein one end of the propeller shaft is mounted within the first gear via bearings.

8. The transmission mechanism of claim 3, wherein one end of the propeller shaft is mounted within the first gear via bearings.

9. The transmission mechanism of claim 4, wherein one end of the propeller shaft is mounted within the first gear via bearings.

10. The transmission mechanism of claim 5, wherein one end of the propeller shaft is mounted within the first gear via bearings.

11. The transmission mechanism of claim 2, wherein a recess is provided at the outer surface of the sliding gear.

12. The transmission mechanism of claim 3, wherein a recess is provided at the outer surface of the sliding gear.

13. The transmission mechanism of claim 4, wherein a recess is provided at the outer surface of the sliding gear.

14. The transmission mechanism of claim 5, wherein a recess is provided at the outer surface of the sliding gear.